MOMENTUM
engineering corp.

June 25, 2018

D. Brian Garcia, Esq.
Kiesel Law, LLP
8648 Wilshire Boulevard
Beverly Hills, CA 90211

Re: *Case Name:* *Villanueva v. State of California, et al.*
Date of Loss: *7/3/2016*
MEC No.: *160237*

Dear Mr. Garcia:

ACCIDENT RECONSTRUCTION ANALYSIS

Introduction

At your request, Momentum Engineering Corp. (MEC) has conducted an accident reconstruction analysis of an incident that occurred July 3, 2016 in Fullerton, CA. According to the State of California Traffic Collision Report #16-43654, a 2015 Chevrolet Silverado pickup driven by Pedro Villanueva was traveling in reverse in a westbound direction on MacArthur Ave. The right rear corner of the Chevrolet collided with a left front door area of a black 2015 Honda Civic that was parked along the west curb of N. Pritchard Ave. Subsequently, Mr. Villanueva began making maneuvers to travel in a southbound direction on N. Pritchard Ave. Shortly thereafter, The Chevrolet rolled in a southerly direction and the left front bumper collided with the left rear door area of a stopped 2015 Ford Taurus driven by CHP officers. Francisco Orozco was a right front passenger in the Chevrolet at the time of the accident. The objective of this analysis was to document the damage to the subject Chevrolet and determine pre- and post-impact vehicle dynamics for the subject Chevrolet.

Documents Reviewed

The following materials and documentation were reviewed and considered:

- State of California Traffic Collision Report #16-43654.
- Color copies of photographs of the accident scene.
- Color copies of photographs of involved vehicles.
- Investigative reports from OCCL, FPD, and CHP.
- Property damage estimate for CHP Ford Taurus.

- Deposition testimony of Francisco Orozco, dated May 3, 2018.
- Deposition testimony of Jon Cleveland, dated October 20, 2017.
- Deposition testimony of Richard Henderson, dated October 20, 2017.
- Deposition testimony of Thomas Ray Hinkle Jr., dated April 18, 2018.
- Deposition testimony of David Sainz, dated May 24, 2018.
- Deposition testimony of Armando Villanueva, dated May 23, 2018.
- Deposition testimony of Abel Orozco, dated April 19, 2018.
- National Automotive Sampling System (NASS) database.
- General Motors vehicle specification for the subject Silverado.
- PC-Crash simulation software.

Site Inspection

The accident site was inspected, photographed, and laser measured on June 18, 2017. Exhibits 1-3 depict the general area of the accident. Exhibit 1 depicts a view of N. Pritchard Ave looking south. Exhibit 2 depicts a view from MacArthur Ave looking in a southwest direction. Exhibit 3 depicts the view of MacArthur Blvd looking in an easterly direction.

Vehicle Inspection

The subject Chevrolet Silverado was inspected, photographed, and laser measured on July 29, 2016 and on April 26, 2018. Exhibits 4-11 depict overall views of the Chevrolet. The VIN was 1GCNCPEC2FZ166579. The Chevrolet was two-wheel drive and equipped with an automatic transmission. The engine was a 5.3L V-8.

The Chevrolet had minor damage to the right rear bumper and taillight area from colliding with the parked Honda Civic. Exhibit 12 depicts an overall view with three locations of damage (yellow arrows). As seen in Exhibit 12 the lower step portion of the bumper corner was deformed upward. Exhibit 13 depicts some light scuffing/scratching to the lower taillight area. Exhibit 14 depicts light cracking to the upper taillight plastic.

Exhibit 15 depicts minor deformation to the left front corner of the Chevrolet from contacting the CHP Ford Taurus (green arrows). Exhibit 16 depicts a small dent in the metal bumper with white transfers. Additionally, abrasions can be seen to the black trim piece above the dented area. Exhibit 17 depicts light scuffing/scratching to the lower turn signal/marker light area.

Analysis

Vehicle specifications were researched for all the involved vehicles. The available physical evidence was analyzed, and the data gathered from the site inspection was incorporated into an accident reconstruction. The areas of impact and areas of rest from the TCR measurements were implemented into a scaled scene diagram. Exhibits 18-19 depict the investigating officer's measurements utilized in the reconstruction. In addition to the measurements, scene photographs as depicted in Exhibits 20-22 were used to corroborate the measurements.

A 3-dimensional computer program called PC-Crash was used to analyze the vehicle impact dynamics and the time-distance analysis leading up to impact. The physical evidence (areas of rest) and scaled aerial diagram can be seen in Exhibit 23. Exhibits 24-29 show the overall dynamics of the Chevrolet. Exhibit 24 depicts the start of the simulation (T=0s). Exhibit 25 depicts the impact between the rear of the Chevrolet and left side of the Honda (T~7s). The impact speed of the Chevrolet was estimated at 4-5 mph. The speed change (ΔV) to the Honda was in the

range of 2-3 mph. This was consistent with the minor damage to both vehicles. Additionally, the impact speed was consistent with independent witnesses who testified of not hearing any tire squealing or engine revving consistent with any kind of aggressive driving. There were no acceleration or deceleration tire scuffs documented or observed in the scene photographs.

Exhibit 26 depicts the Chevrolet after it has pulled forward with full right steering and stopped (T~11.4s). Based on the position of the Chevrolet after impacting the Honda and where the pickup ultimately collides with the CHP Taurus, the right steering maneuver cannot be completed in one motion. Based on literature, the Chevrolet has a steering diameter of approximately 40 feet. Exhibit 27 depicts the Chevrolet after is has moved rearward with full left steering and stopped (T~15.7s). Exhibit 28 depicts the Chevrolet now moving forward with full right steer, just prior to the vehicle beginning to coast (T~19.3s). At this point in time the truck is traveling roughly 3 mph and is approximately 15-20 feet from colliding with the CHP Taurus. From the Chevrolet position in Exhibit 28 to the position in Exhibit 29 where impact occurs with the Taurus, the Chevrolet motion was modeled as coasting at approximately 3 mph, with the front wheels steering back to the left. The impact speed of approximately 3 mph was consistent with the minor damage to both vehicles. A plot of the Chevrolet overall speed throughout the simulation can be seen in Exhibit 30. As can be seen from the graph, the total time from the initial reverse movement to impact with the CHP Ford was approximately 23-24 seconds. Additionally, the time from impact with the Honda Civic to the impact with the CHP Ford was roughly 16-17 seconds.

The airbag module was downloaded in the Chevrolet pickup. The airbag module acts as a data recorder in the event of an impact. Typically, the threshold for the module to start recording is in the 5 mph ΔV range. As expected, the airbag module did not have a recording for the subject accident due to the minor severity (Exhibit 31). Additionally, research was performed using the National Automotive Sampling System (NASS) to try and locate similar impacts that did trigger a data recording. Exhibits 32-34 depict a crash involving the right front corner of a 2011 Chevrolet Silverado. The impact produced a ΔV of approximately 4.5 mph as seen from the airbag module download in Exhibit 34. Comparing the impact damage depicted in the NASS example to the subject Chevrolet, the damage to the subject Chevrolet was certainly less severe than the NASS example. Again, the impact speeds and level of damage to the subject Chevrolet and CHP Taurus was consistent with independent witnesses who did not hear tire screeching or engine revving, not consistent with any kind of aggressive driving. There were no acceleration or deceleration tire scuffs documented or observed in the scene photographs.

Conclusions

Based on review and consideration of the available evidence, scientific literature, published test data, and the writer's education, training, background, and experience the following conclusions were reached to a reasonable degree of scientific probability:

- Mr. Villanueva was driving his Chevrolet westbound in reverse prior to colliding with a parked Honda Civic.
- The impact speed of the Chevrolet when the right rear corner collided with the parked Honda Civic was in the range of 4-5 mph.
- The speed change (ΔV) to the Honda Civic was in the range of 2-3 mph.
- After impact with the Honda Civic, Mr. Villanueva began to maneuver the Chevrolet toward a southbound heading.
- The left front of the Chevrolet subsequently collided with the left rear door of the CHP Ford Taurus.

- The movement of the Chevrolet from impact with the Honda Civic to impacting the CHP Ford could not be done in one maneuver due to the proximity of the vehicles.
- The Chevrolet was traveling 3-5 mph when it collided with CHP Ford.
- The impact speeds and maneuvers of the Chevrolet were not consistent with aggressive driving by Mr. Villanueva.
- The independent witness testimony of not hearing tires squealing or an engine revving was also not consistent with aggressive driving by Mr. Villanueva. Similarly, no acceleration or deceleration tire scuffs were documented or observed in the scene photographs.

The opinions and conclusions expressed in this report are based upon the information and materials provided to the writer as of the date of this report. If additional information becomes available then the author reserves the right to review this information, which may or may not change the opinions and conclusions expressed in this report.

Respectfully submitted,

Edward C. Fatzinger Jr., MS, PE
Senior Forensic Engineer

EXHIBIT 1

EXHIBIT 2

EXHIBIT 3

EXHIBIT 4

EXHIBIT 5

EXHIBIT 6

EXHIBIT 7

EXHIBIT 8

EXHIBIT 9

EXHIBIT 10

EXHIBIT 11

EXHIBIT 12

EXHIBIT 13

EXHIBIT 14

EXHIBIT 15

EXHIBIT 16

EXHIBIT 17

EXHIBIT 18

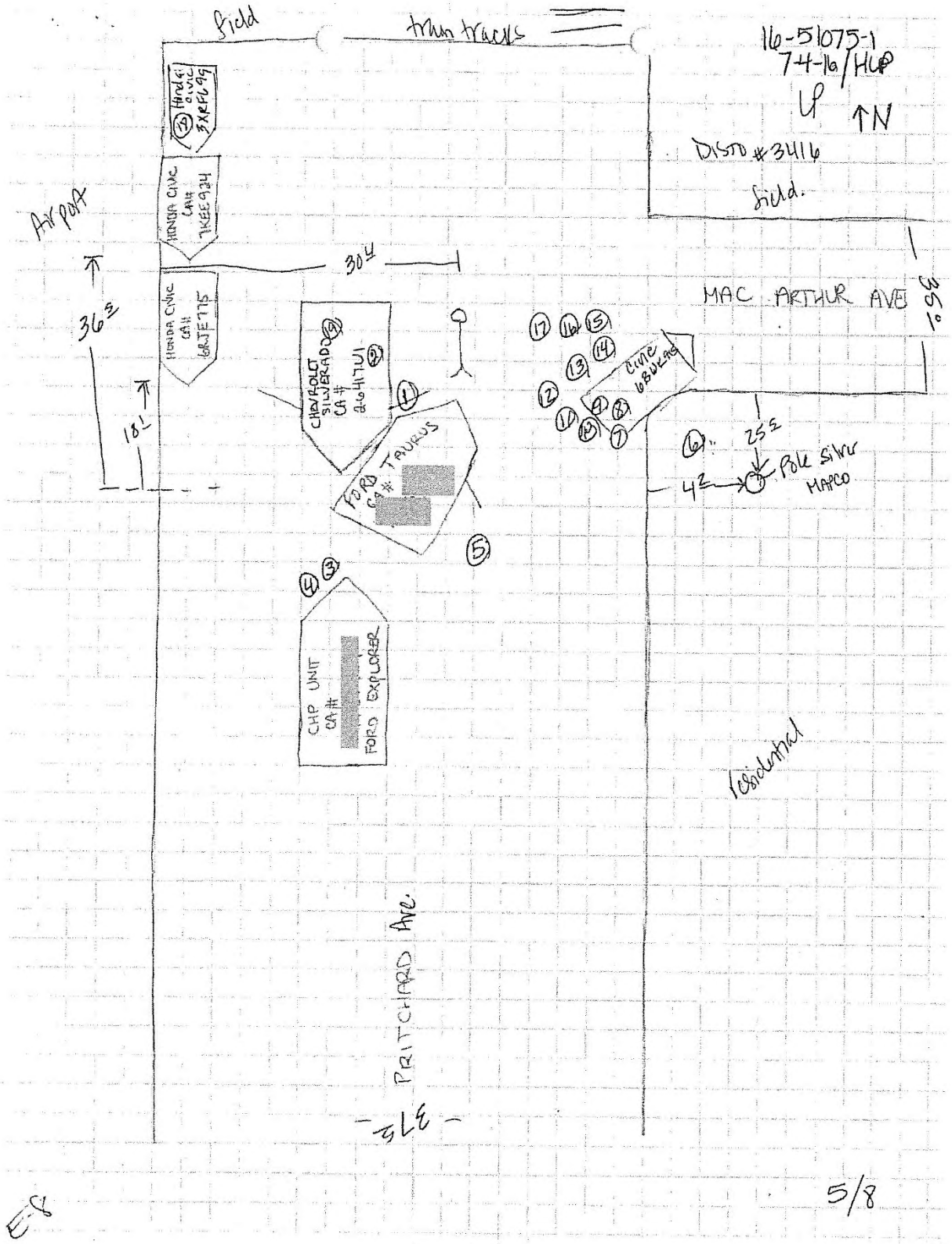
field
train tracks
16-51075-1
74-16/HLP
UP
↑N
DIST #3416
field.
MAC ARTHUR AVE
35'
30'
36'
18'
AIRPORT
HONDA CIVIC
CA# 6RJE775
HONDA CIVIC
CA# 7KEE934
CHEVROLET SILVERADO
CA# 4-04417U1
FORD TAURUS
CA#
CHP UNIT
CA#
FORD EXPLORER
CIVIC 6BVE949
25'
POLE SIGN
MAPCO
4'
PRITCHARD Ave.
-37'-
residential
E-S
5/8

EXHIBIT 19

CRIME LAB
ORANGE COUNTY, CALIFORNIA

OC CRIME LAB
IDENTIFICATION BUREAU
CRIME SCENE NOTES
L. Pena-Sanchez, Sr. Forensic Specialist

FR# 16-51075-1
Date: 7-4-16 HLP

CRIME SCENE MEASUREMENTS

ITEM #'S (Evidence Markers)	DESCRIPTION OF ITEM		DISTANCE FROM REFERENCE POINT RP1 W/CL OF PRITCHARD	RP2 Pole NAC ARTHUR
	BLACK FORD TAURUS	LF	26'	45' 20"
	CA# [redacted]	RR	25' 11"	5' 5"
	RED FORD CHEVROLET TRUCK	LF	22' 2"	13' 2"
	SILVERADO CA# 2041701	RR	14' 9"	27' 11"
	BLACK+WHITE FORD EXPLORER	LF	12' 4"	Ø
	CHP UNIT CA# [redacted]	RR	17' 8"	14' 8"
1	clothes, blk t-shirt, dark jeans, wallet, white athletic shoes, blk socks, bullet frag. (app. bullet jacket frag.) body: head		23' 9"	21' 7"
	suit			29' 10"
2/3	C/C WIN .40 S&W / app. bullet jacket frag. on ground		22' 0" / bullet chem 18' 7"	25' 4" / 24' 4"
4/5	C/C WIN .40 S&W on ground		18' 7"	4' 12"
	magazine on ground		34' 1"	Ø
6/7	C/C WIN .40 S&W on ground		47' 2"	10' 7"
8	" "		43' 8"	12' 3"
9	" "		45' 1"	15' 0"
10	" "		43' 10"	16' 6"
11	" "		42' 9"	17' 8"
12	" "		40' 10"	17' 0"
13	" "		~~38' 10"~~ 37' 2"	17' 2"
14	" "		40' 10"	20' 10"
15	" "		47' 2"	22' 10"
16	" "		47' 2"	23' 8"
17	" "		41' 11"	28' 2"
			38' 10"	27' 11"
	Honda Civic CA# [redacted]	LF	51'	~~LF 32'~~ 27' 13"
	Blue.	RR	41' 2"	~~32' 10"~~ 14' 3"
18	app. bullet jacketed frag. on hood of Honda		13' 3"	55' 3"
19	app. bullet frag. in bed of truck-Chem		16' 12"	25' 5"

E.9

INITIALS: LP PAGE 6 OF 8

CHP-001932

EXHIBIT 20

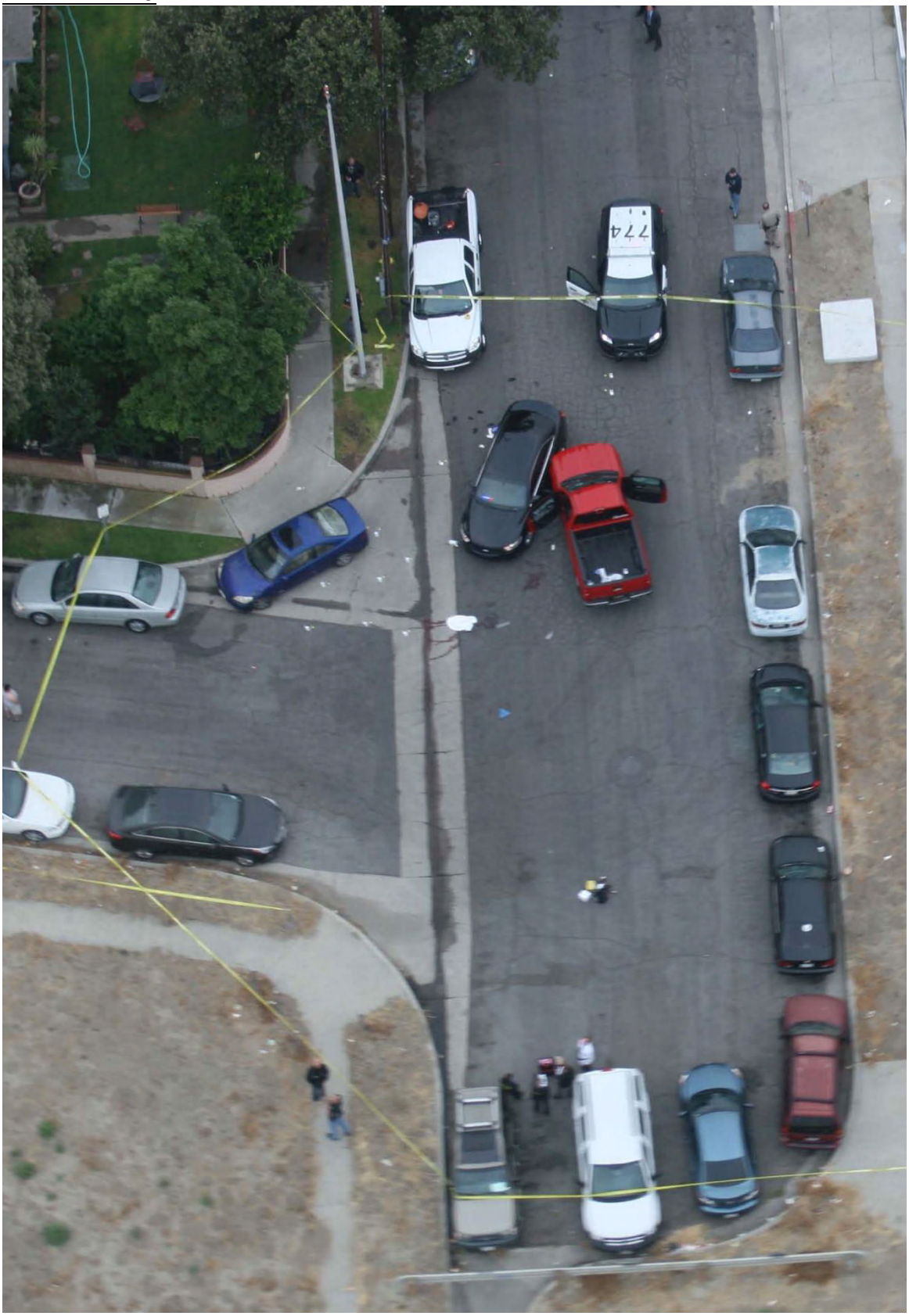

EXHIBIT 21

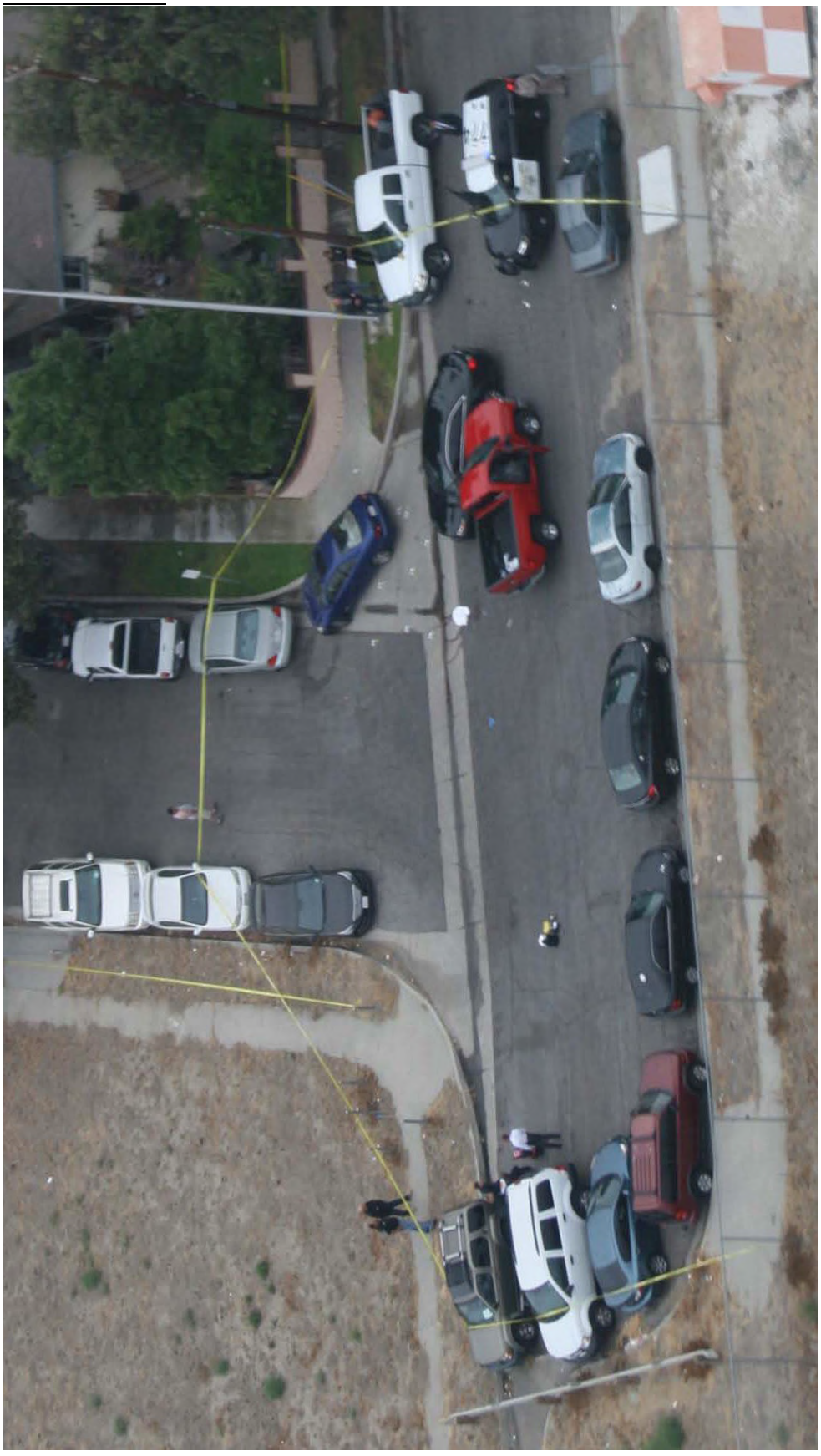

EXHIBIT 22

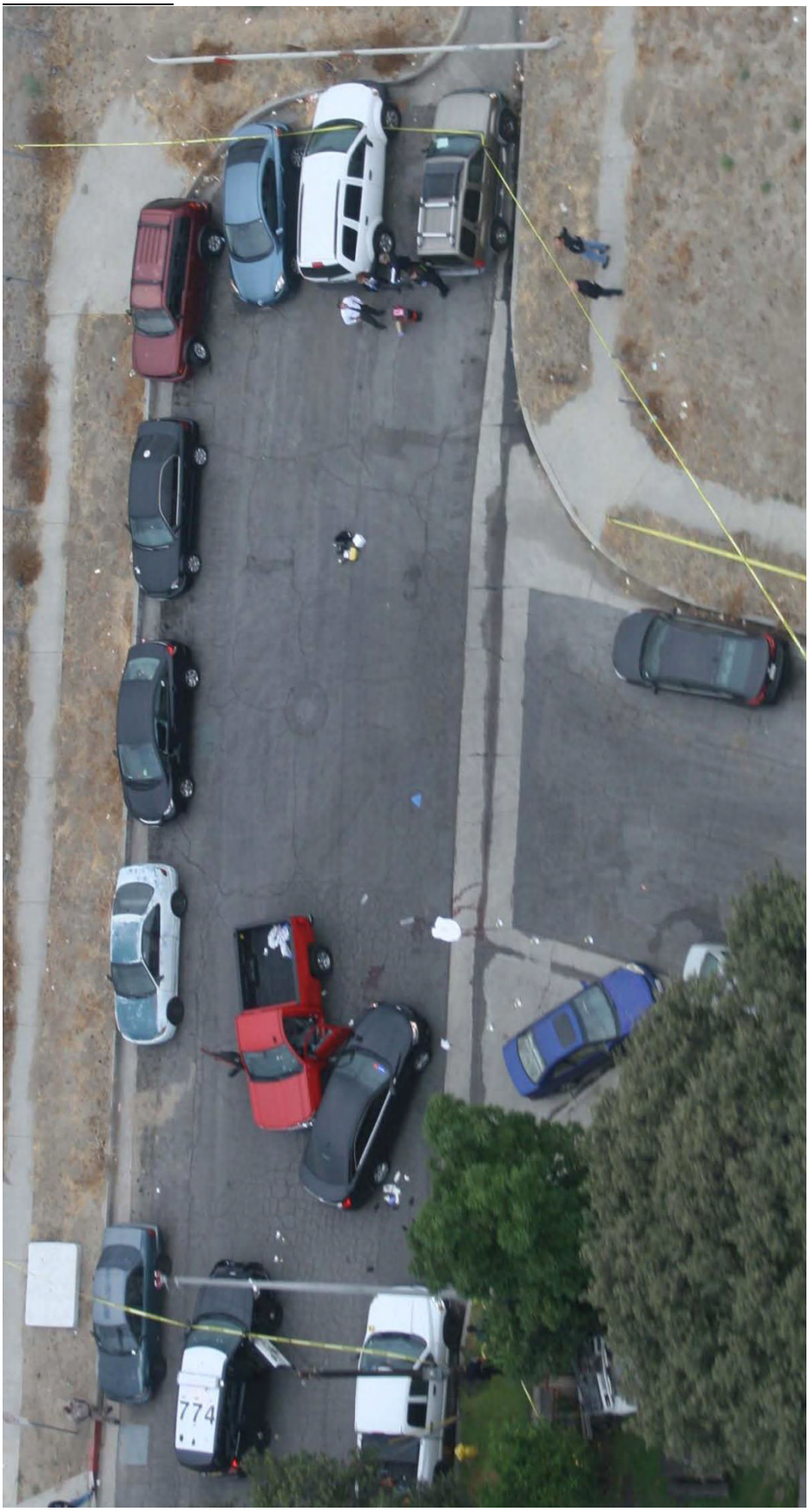

EXHIBIT 23

EXHIBIT 24

EXHIBIT 25

EXHIBIT 26

EXHIBIT 27

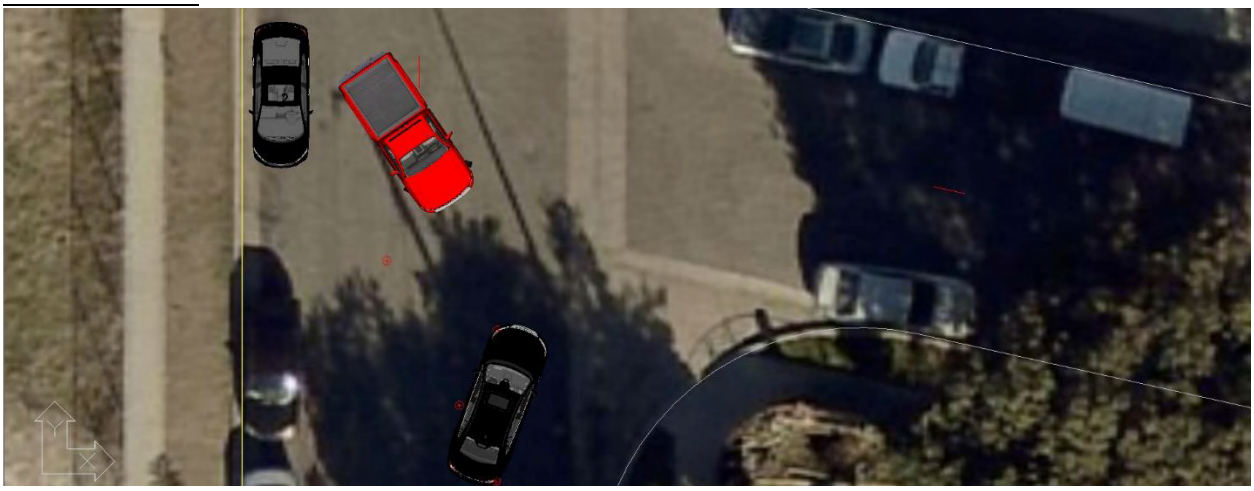

EXHIBIT 28

EXHIBIT 29

EXHIBIT 30

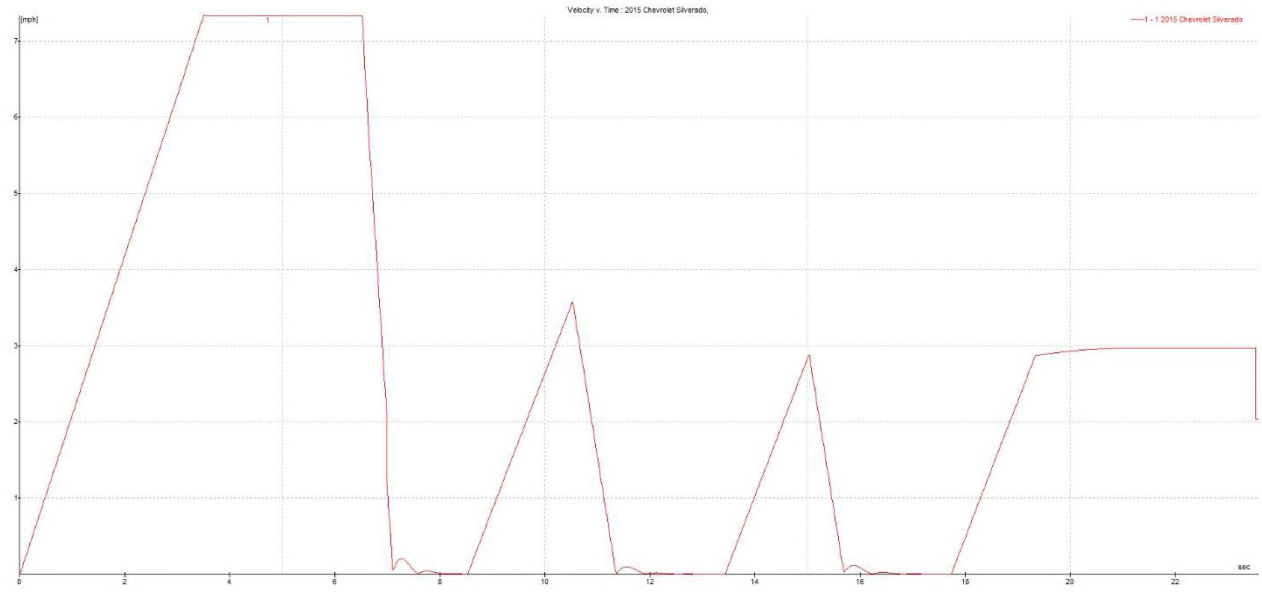

EXHIBIT 31

BOSCH CDR CRASH DATA RETRIEVAL

IMPORTANT NOTICE: Robert Bosch LLC and the manufacturers whose vehicles are accessible using the CDR System urge end users to use the latest production release of the Crash Data Retrieval system software when viewing, printing or exporting any retrieved data from within the CDR program. Using the latest version of the CDR software is the best way to ensure that retrieved data has been translated using the most current information provided by the manufacturers of the vehicles supported by this product.

CDR File Information

User Entered VIN	1GCNCPEC2FZ166579
User	ECF
Case Number	
EDR Data Imaging Date	07/29/2016
Crash Date	
Filename	1GCNCPEC2FZ166579_ACM.CDRX
Saved on	Friday, July 29 2016 at 13:57:27
Collected with CDR version	Crash Data Retrieval Tool 16.6
Reported with CDR version	Crash Data Retrieval Tool 16.6
EDR Device Type	Airbag Control Module
Event(s) recovered	NONE

Comments

DLC Download

Data Limitations

Recorded Crash Events:

There are two types of recorded crash events for Front, Side, and Rear (FSR) Events. The first is the Non-Deployment Event. A Non-Deployment Event records data but does not deploy the air bag(s). The minimum SDM Recorded Vehicle Velocity Change, that is needed to record a Non-Deployment Event, is five MPH [8 km/h]. A Non-Deployment Event contains Pre-Crash and Crash data. The oldest Non-Deployment event can be overwritten by a Deployment Event, if all three records are full and the Non-Deployment Event is not locked. A Non-Deployment Event can be overwritten by a more recent Non-Deployment Event if all three records are full and the Non-Deployment is older than approximately 250 ignition cycles. Also, a Non-Deployment event can be recorded if one of the following occurs without the Deployment of any of the frontal air bags, side air bags, or roll bars:

-Pretensioner(s) only Deployment
-Head Rest Deployment
-Battery Cut-Off Deployment

The second type of SDM recorded crash event for FSR Events is the Deployment Event. It also contains Pre-Crash and Crash data. Deployment Events cannot be overwritten or cleared by the SDM.
Rollover Events contains Pre-Crash and Crash data. Rollover event follow the same rules as FSR Deployment events. The SDM can store up to three Events.

Data:

For FSR Events, SDM Recorded Vehicle Velocity Change reflects the change in velocity that the sensing system experienced during the recorded portion of the event. SDM Recorded Vehicle Velocity Change is the change in velocity during the recording time and is not the speed the vehicle was traveling before the event, and is also not the Barrier Equivalent Velocity. For Deployment and Non-Deployment Events, the SDM will record up to 300 milliseconds of data after time zero. The SDM will also record up to 300 milliseconds of Vehicle Acceleration data after time zero.
For Rollover Events, the SDM may record Lateral Acceleration, Vertical Acceleration, and Roll Rate data, if the SDM is rollover capable. This data reflects what the sensing system experienced during the recorded portion of the event. For Rollover Deployment Events, the SDM will record up to 700 milliseconds of data before the Deployment criteria is met and 290 milliseconds after the Deployment criteria is met.
-Deployment loops may be displayed as being deployed in a Non-Deployment event record, if a Deployment event is qualified during the Non-Deployment event. That is, if two or more events are occurring at the same time and one is a Non-Deployment event and one of the others is a Deployment event, and the Deployment event is qualified while the Non-Deployment is still active, the deployed loops may be recorded in the Non-Deployment event record.
-Time between events is recorded in 10 msec intervals and is displayed in seconds for a maximum time of 655.33 seconds. The counter measures the time from the start of one event to the start of the next event if both events occur within the same ignition cycle.
-The Maximum SDM Recorded Vehicle Velocity Change may occur between the recorded 10 millisecond sample points of the SDM Recorded Vehicle Velocity Change.
-Event Recording Complete will indicate if data from the recorded event has been fully written to the SDM memory or if it has been interrupted and not fully written.
-SDM Recorded Vehicle Speed accuracy can be affected by various factors, including but not limited to the following:

-Significant changes in the tire's rolling radius
-Final drive axle ratio changes
-Wheel lockup and wheel slip

BOSCH CDR CRASH DATA RETRIEVAL

-Brake Switch Circuit Status indicates the open/closed state of the brake switch circuit.
-Pre-Crash data is recorded asynchronously. The 0.5 second Pre-crash data value (most recent recorded data point) is the data point last sampled before Time Zero. That is to say, the last data point may have been captured just before Time Zero but no more than 0.5 second before Time Zero. All subsequent Pre-crash data values are referenced from this data point.
-Pre-Crash Electronic Data Validity Check Status indicates "Data Invalid" if:
-The SDM receives a message with an "invalid" flag from the module sending the pre-crash data
-Pre-Crash Electronic Data Validity Check Status indicates "Data Not Available" if:
-No data is received from the module sending the pre-crash data
-For diesel powered vehicles, the data displayed as Throttle Position (%) is actually the data for the Air Inlet Flap Position. This is not the same as the throttle position for a gasoline powered engines.
-Belt Switch Circuit Status indicates the status of the seat belt switch circuit.
-The ignition cycle counter will increment when the power mode cycles from OFF/Accessory to RUN. Applying and removing of battery power to the module will not increment the ignition cycle counter.
-Ignition Cycles Since DTCs Were Last Cleared can record a maximum value of 253 cycles and can only be reset by a scan tool.
-Dynamic Deployment Event Counter tracks the number of Deployment events that have occurred during the SDM's lifetime.
-Dynamic Event Counter tracks the number of qualified events (either Deployments, Non-deploy, or Rollover events) that have occurred during the SDM's lifetime.
-For Deployment Events, DTC B0052 (Deployment commanded) shall be recorded with the remainder of the data for this event even though it occurred after Event Enable.
-Once a firing loop has been commanded to be deployed, it will not be commanded to be deployed again during the same ignition cycle. Firing loop times for subsequent deployment type events, during the same ignition cycle, will record the deployment times as N/A.
-In an event where the module is operating on energy reserve, the Dynamic counters may report a value that is less than the actual value. If the stored values in the Dynamic counters are less than the counter values in the event records or if more than one event record has the same counter value as another, the module may have been operating on its energy reserve.
-The GM parameter name is displayed in parentheses after the NHTSA Part 563 parameter name.
-The reported range of the longitudinal and lateral acceleration values is approximately ± 105 g.
-All data should be examined in conjunction with other available physical evidence from the vehicle and scene.

Data Source:
All SDM recorded data is measured, calculated, and stored internally, except for the following:
-Vehicle Status Data (Pre-Crash) is transmitted by the Body Control Module, via the vehicle's communication network.
-The Belt Switch Circuit is wired directly to the SDM.

Data Element Sign Convention:
The following table provides an explanation of the sign notation for data elements that may be included in this CDR report. Directional references to sign notation are all from the perspective of the driver when seated in the vehicle facing the direction of forward vehicle travel.

Data Element Name	Positive Sign Notation Indicates
Longitudinal Acceleration	Forward
Longitudinal Velocity Change	Forward
Lateral Acceleration	Left to Right
Lateral Velocity Change	Left to Right
Vertical Acceleration	Downward
Roll Rate	Clockwise Rotation

Hexadecimal Data:
Data that the vehicle manufacturer has specified for data retrieval is shown in the hexadecimal data section of the CDR report. The hexadecimal data section of the CDR report may contain data that is not translated by the CDR program. The control module contains additional data that is not retrievable by the CDR tool.

01050_SDM30-delphi_r012

BOSCH CDR CRASH DATA RETRIEVAL

System Status at Time of Retrieval

Dynamic Deployment Event Counter	0
Multi-Event, Number of Events (Dynamic Event Counter)	0
Dynamic OnStar Notification Event Counter	0
Vehicle Identification Number (VIN)	1GCNCPEC2FZ166579
Ignition Cycle, Download (Ignition Cycles at Investigation)	6535
End Model Part Number	00CF6F22
System Type	N/A
Software Module Identifier 1	00CF6F21
Software Module Identifier 2	016214F1
Software Module Identifier 3	01621D42
Manufacturing Traceability Data, Component Identifier	K1
Manufacturing Traceability Data, Part Number/Broadcast Code	1426
Manufacturing Traceability Data, Supplier Code	5
Manufacturing Traceability Data, Traceability Number	3M11CZW00
ESS # 1 Traceability Data, Component Identifier	AU
ESS # 1 Traceability Data, Part Number/Broadcast Code	8677
ESS # 1 Traceability Data, Supplier Code	D
ESS # 1 Traceability Data, Traceability Number	P17143B40
ESS # 2 Traceability Data, Component Identifier	AT
ESS # 2 Traceability Data, Part Number/Broadcast Code	8677
ESS # 2 Traceability Data, Supplier Code	D
ESS # 2 Traceability Data, Traceability Number	P17149B40
ESS # 3 Traceability Data, Component Identifier	AH
ESS # 3 Traceability Data, Part Number/Broadcast Code	8676
ESS # 3 Traceability Data, Supplier Code	D
ESS # 3 Traceability Data, Traceability Number	A91BCE903
ESS # 4 Traceability Data, Component Identifier	AJ
ESS # 4 Traceability Data, Part Number/Broadcast Code	8676
ESS # 4 Traceability Data, Supplier Code	D
ESS # 4 Traceability Data, Traceability Number	AE5B9E903
ESS # 5 Traceability Data, Component Identifier	??
ESS # 5 Traceability Data, Part Number/Broadcast Code	8678
ESS # 5 Traceability Data, Supplier Code	D
ESS # 5 Traceability Data, Traceability Number	A00000000
ESS # 6 Traceability Data, Component Identifier	??
ESS # 6 Traceability Data, Part Number/Broadcast Code	8678
ESS # 6 Traceability Data, Supplier Code	D
ESS # 6 Traceability Data, Traceability Number	A00000000
ESS # 7 Traceability Data, Component Identifier	??
ESS # 7 Traceability Data, Part Number/Broadcast Code	0000
ESS # 7 Traceability Data, Supplier Code	D
ESS # 7 Traceability Data, Traceability Number	A00000000
ESS # 8 Traceability Data, Component Identifier	??
ESS # 8 Traceability Data, Part Number/Broadcast Code	0000
ESS # 8 Traceability Data, Supplier Code	D
ESS # 8 Traceability Data, Traceability Number	A00000000

BOSCH CDR CRASH DATA RETRIEVAL

Hexadecimal Data

```
DPID $11
FF F0 00 F0 C6 7C 04

DPID $15
01 02 03 04 05 06 07

DPID $16
08 09 0A 0D 0E 27 27

DPID $17
27 27 27 27 27 27 00

DPID $32
FA FF 19 87 00 00 00

DPID $35
78 00 00 00 00 00 00

DID $01
41 55 38 36 37 37 44 50 31 37 31 34 33 42 34 30

DID $03
41 54 38 36 37 37 44 50 31 37 31 34 39 42 34 30

DID $05
41 48 38 36 37 36 44 41 39 31 42 43 45 39 30 33

DID $07
41 4A 38 36 37 36 44 41 45 35 42 39 45 39 30 33

DID $09
01 00 38 36 37 38 44 41 30 30 30 30 30 30 30 30

DID $0B
01 00 38 36 37 38 44 41 30 30 30 30 30 30 30 30

DID $0D
01 00 30 30 30 30 44 41 30 30 30 30 30 30 30 30

DID $0F
01 00 30 30 30 30 44 41 30 30 30 30 30 30 30 30

DID $30
00 00 00 00

DID $90
31 47 43 4E 43 50 45 43 32 46 5A 31 36 36 35 37 39

DID $9A
0B 11

DID $B4
4B 31 31 34 32 36 35 33 4D 31 31 43 5A 57 30 30

DID $C1
00 CF 6F 21

DID $C2
01 62 14 F1

DID $C3
```

BOSCH CDR CRASH DATA RETRIEVAL

01 62 1D 42

DID $CB
00 CF 6F 22

DID $31

0000	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0010	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0020	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0030	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0040	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0050	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0060	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0070	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0080	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0090	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0100	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0110	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0120	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0130	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0140	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0150	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0160	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0170	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0180	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0190	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0200	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0210	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0220	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0230	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0240	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0250	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0260	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0270	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0280	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0290	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0300	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0310	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0320	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0330	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0340	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0350	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0360	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0370	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0380	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0390	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0400	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0410	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0420	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0430	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0440	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0450	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0460	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0470	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0480	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0490	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0500	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0510	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0520	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0530	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0540	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0550	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0560	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0570	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

BOSCH CDR CRASH DATA RETRIEVAL

```
0580   FF FF FF FF FF FF FF FF FF FF
0590   FF FF FF FF FF FF FF FF FF FF
0600   FF FF FF FF FF FF FF FF FF FF
0610   FF FF FF FF FF FF FF FF FF FF
0620   FF FF FF FF FF FF FF FF FF FF
0630   FF FF FF FF FF FF FF FF FF FF
0640   FF FF FF FF FF FF FF FF FF FF
0650   FF FF FF FF FF FF FF FF FF FF
0660   FF FF FF FF FF FF FF FF FF FF
0670   FF FF FF FF FF FF FF FF FF FF
0680   FF FF FF FF FF FF FF FF FF FF
0690   FF FF FF FF FF FF FF FF FF FF
0700   FF FF FF FF FF FF FF FF FF FF
0710   FF FF FF FF FF FF FF FF FF FF
0720   FF FF FF FF FF FF FF FF FF FF
0730   FF FF FF FF FF FF FF FF FF FF
0740   FF FF FF FF FF FF FF FF FF FF
0750   FF FF FF FF FF FF FF FF FF FF
0760   FF FF FF FF FF FF FF FF FF FF
0770   FF FF FF FF FF FF FF FF FF FF
0780   FF FF FF FF FF FF FF FF FF FF
0790   FF FF FF FF FF FF FF FF FF FF
0800   FF FF FF FF FF FF FF FF FF FF
0810   FF FF FF FF FF FF FF FF FF FF
0820   FF FF FF FF FF FF FF FF FF FF
0830   FF FF FF FF FF FF FF FF FF FF
0840   FF FF FF FF FF FF FF FF FF FF
0850   FF FF FF FF FF FF FF FF FF FF
0860   FF FF FF FF FF FF FF FF FF FF
0870   FF FF FF FF FF FF FF FF FF FF
0880   FF FF FF FF FF FF FF FF FF FF
0890   FF FF FF FF FF FF FF FF FF FF
0900   FF FF FF FF FF FF FF FF FF FF
0910   FF FF FF FF FF FF FF FF FF FF
0920   FF FF FF FF FF FF FF FF FF FF
0930   FF FF FF FF FF FF FF FF FF FF
0940   FF FF FF FF FF FF FF FF FF FF
0950   FF FF FF FF FF FF FF FF FF FF
0960   FF FF FF FF FF FF FF FF FF FF
0970   FF FF FF FF FF FF FF FF FF FF
0980   FF FF FF FF FF FF FF FF FF FF
0990   FF FF FF FF FF FF FF FF FF FF
1000   FF FF FF FF FF FF FF FF FF FF
1010   FF FF FF FF FF FF FF FF FF FF
1020   FF FF FF FF FF FF FF FF FF FF
1030   FF FF FF FF FF FF FF FF FF FF
1040   FF FF FF FF FF FF FF FF FF FF
1050   FF FF FF FF FF FF FF FF FF FF
1060   FF FF FF FF FF FF FF FF FF FF
1070   FF FF FF FF FF FF FF FF FF FF
1080   FF FF FF FF FF FF FF FF FF FF
1090   FF FF FF FF FF FF FF FF FF FF
1100   FF FF FF FF FF FF FF FF FF FF
1110   FF FF FF FF FF FF FF FF FF FF
1120   FF FF FF FF FF FF FF FF FF FF
1130   FF FF FF FF FF FF FF FF FF FF
1140   FF FF FF FF FF FF FF FF FF FF
1150   FF FF FF FF FF FF FF FF FF FF
1160   FF FF FF FF FF FF FF FF FF FF
1170   FF FF FF FF FF FF FF FF FF FF
1180   FF FF FF FF FF FF FF FF FF FF
1190   FF FF FF FF FF FF FF FF FF FF
1200   FF

DID $32
```

BOSCH CDR CRASH DATA RETRIEVAL

0000	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0010	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0020	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0030	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0040	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0050	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0060	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0070	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0080	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0090	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0100	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0110	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0120	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0130	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0140	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0150	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0160	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0170	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0180	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0190	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0200	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0210	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0220	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0230	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0240	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0250	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0260	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0270	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0280	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0290	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0300	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0310	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0320	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0330	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0340	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0350	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0360	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0370	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0380	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0390	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0400	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0410	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0420	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0430	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0440	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0450	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0460	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0470	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0480	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0490	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0500	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0510	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0520	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0530	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0540	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0550	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0560	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0570	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0580	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0590	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0600	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0610	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0620	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0630	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

BOSCH CDR CRASH DATA RETRIEVAL

```
0640   FF FF FF FF FF FF FF FF FF FF
0650   FF FF FF FF FF FF FF FF FF FF
0660   FF FF FF FF FF FF FF FF FF FF
0670   FF FF FF FF FF FF FF FF FF FF
0680   FF FF FF FF FF FF FF FF FF FF
0690   FF FF FF FF FF FF FF FF FF FF
0700   FF FF FF FF FF FF FF FF FF FF
0710   FF FF FF FF FF FF FF FF FF FF
0720   FF FF FF FF FF FF FF FF FF FF
0730   FF FF FF FF FF FF FF FF FF FF
0740   FF FF FF FF FF FF FF FF FF FF
0750   FF FF FF FF FF FF FF FF FF FF
0760   FF FF FF FF FF FF FF FF FF FF
0770   FF FF FF FF FF FF FF FF FF FF
0780   FF FF FF FF FF FF FF FF FF FF
0790   FF FF FF FF FF FF FF FF FF FF
0800   FF FF FF FF FF FF FF FF FF FF
0810   FF FF FF FF FF FF FF FF FF FF
0820   FF FF FF FF FF FF FF FF FF FF
0830   FF FF FF FF FF FF FF FF FF FF
0840   FF FF FF FF FF FF FF FF FF FF
0850   FF FF FF FF FF FF FF FF FF FF
0860   FF FF FF FF FF FF FF FF FF FF
0870   FF FF FF FF FF FF FF FF FF FF
0880   FF FF FF FF FF FF FF FF FF FF
0890   FF FF FF FF FF FF FF FF FF FF
0900   FF FF FF FF FF FF FF FF FF FF
0910   FF FF FF FF FF FF FF FF FF FF
0920   FF FF FF FF FF FF FF FF FF FF
0930   FF FF FF FF FF FF FF FF FF FF
0940   FF FF FF FF FF FF FF FF FF FF
0950   FF FF FF FF FF FF FF FF FF FF
0960   FF FF FF FF FF FF FF FF FF FF
0970   FF FF FF FF FF FF FF FF FF FF
0980   FF FF FF FF FF FF FF FF FF FF
0990   FF FF FF FF FF FF FF FF FF FF
1000   FF FF FF FF FF FF FF FF FF FF
1010   FF FF FF FF FF FF FF FF FF FF
1020   FF FF FF FF FF FF FF FF FF FF
1030   FF FF FF FF FF FF FF FF FF FF
1040   FF FF FF FF FF FF FF FF FF FF
1050   FF FF FF FF FF FF FF FF FF FF
1060   FF FF FF FF FF FF FF FF FF FF
1070   FF FF FF FF FF FF FF FF FF FF
1080   FF FF FF FF FF FF FF FF FF FF
1090   FF FF FF FF FF FF FF FF FF FF
1100   FF FF FF FF FF FF FF FF FF FF
1110   FF FF FF FF FF FF FF FF FF FF
1120   FF FF FF FF FF FF FF FF FF FF
1130   FF FF FF FF FF FF FF FF FF FF
1140   FF FF FF FF FF FF FF FF FF FF
1150   FF FF FF FF FF FF FF FF FF FF
1160   FF FF FF FF FF FF FF FF FF FF
1170   FF FF FF FF FF FF FF FF FF FF
1180   FF FF FF FF FF FF FF FF FF FF
1190   FF FF FF FF FF FF FF FF FF FF
1200   FF

DID $33

0000   FF FF FF FF FF FF FF FF FF FF
0010   FF FF FF FF FF FF FF FF FF FF
0020   FF FF FF FF FF FF FF FF FF FF
0030   FF FF FF FF FF FF FF FF FF FF
0040   FF FF FF FF FF FF FF FF FF FF
```

BOSCH CDR CRASH DATA RETRIEVAL

0050	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0060	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0070	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0080	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0090	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0100	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0110	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0120	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0130	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0140	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0150	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0160	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0170	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0180	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0190	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0200	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0210	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0220	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0230	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0240	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0250	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0260	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0270	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0280	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0290	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0300	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0310	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0320	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0330	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0340	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0350	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0360	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0370	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0380	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0390	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0400	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0410	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0420	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0430	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0440	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0450	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0460	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0470	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0480	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0490	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0500	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0510	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0520	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0530	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0540	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0550	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0560	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0570	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0580	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0590	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0600	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0610	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0620	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0630	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0640	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0650	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0660	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0670	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0680	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0690	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

BOSCH CDR CRASH DATA RETRIEVAL

0700	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0710	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0720	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0730	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0740	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0750	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0760	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0770	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0780	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0790	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0800	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0810	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0820	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0830	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0840	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0850	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0860	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0870	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0880	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0890	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0900	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0910	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0920	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0930	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0940	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0950	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0960	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0970	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0980	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0990	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1000	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1010	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1020	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1030	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1040	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1050	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1060	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1070	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1080	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1090	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1100	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1110	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1120	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1130	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1140	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1150	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1160	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1170	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1180	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1190	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1200	FF									

Disclaimer of Liability

The users of the CDR product and reviewers of the CDR reports and exported data shall ensure that data and information supplied is applicable to the vehicle, vehicle's system(s) and the vehicle ECU. Robert Bosch LLC and all its directors, officers, employees and members shall not be liable for damages arising out of or related to incorrect, incomplete or misinterpreted software and/or data. Robert Bosch LLC expressly excludes all liability for incidental, consequential, special or punitive damages arising from or related to the CDR data, CDR software or use thereof.

EXHIBIT 32

EXHIBIT 33

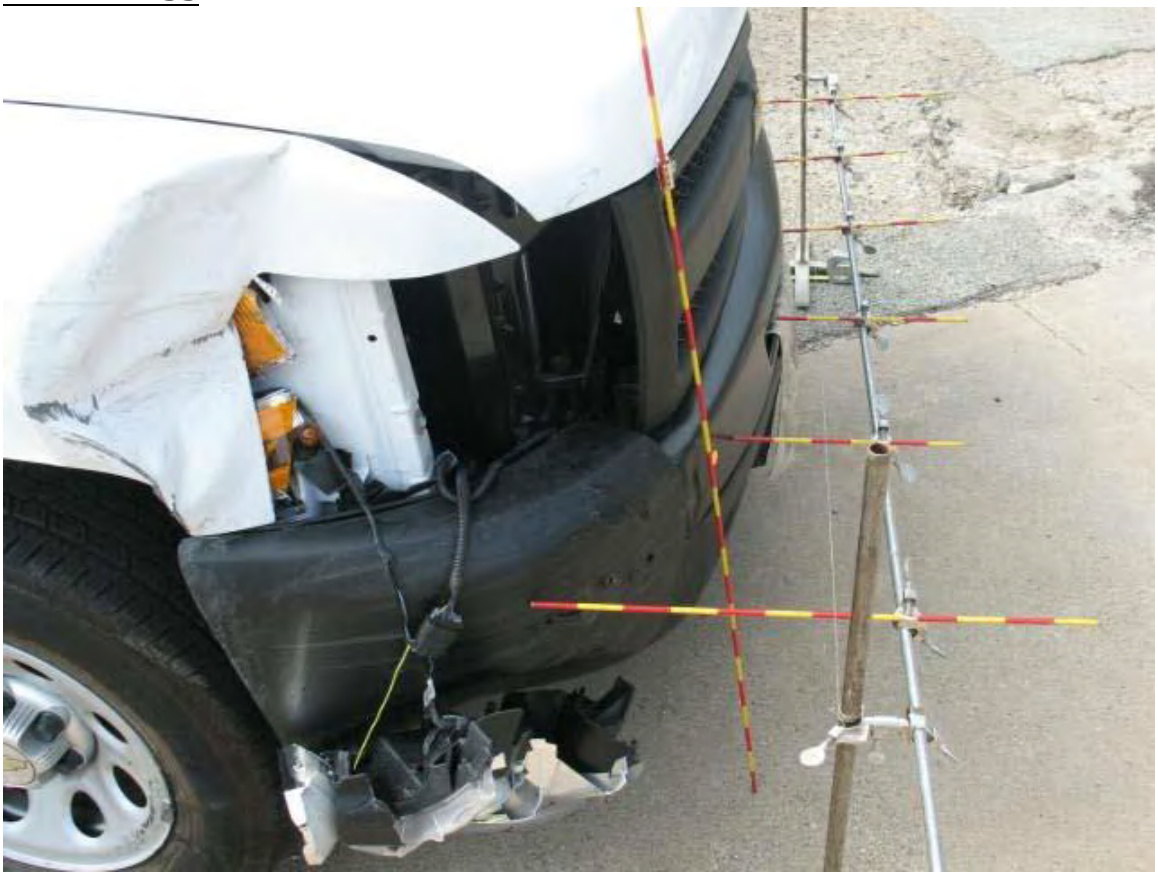

EXHIBIT 34

NASS Case Number: 2011-49-100

Longitudinal Delta V

Time (ms)	Delta V (MPH)
10	0
20	-.6
30	-.6
40	-1.2
50	-1.9
60	-1.9
70	-1.9
80	-1.9
90	-2.5
100	-2.5
110	-3.1
120	-3.1
130	-3.1
140	-3.7
150	-3.7
160	-3.7
170	-3.7
180	-3.7
190	-3.7
200	-3.7
210	-3.7
220	-3.7
230	-3.7
240	-3.7
250	-3.7
260	-3.7
270	-3.7
280	-3.7
290	-3.7
300	-3.7

Lateral Delta V

Time (ms)	Delta V (MPH)
10	0
20	0
30	-.6
40	-.6
50	-.6
60	0
70	0
80	0
90	0
100	-.6
110	-1.2
120	-1.9
130	-1.9
140	-1.9
150	-.6
160	-.6
170	-.6
180	-.6
190	-1.2
200	-1.9
210	-2.5
220	-2.5
230	-1.2
240	-.6
250	-.6
260	0
270	-.6
280	-.6
290	-1.2
300	-1.2